PATENT COOPERATION TREATY

From the INTERNATIONAL BUREAU

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

To:

Commissioner
US Department of Commerce
United States Patent and Trademark
Office, PCT
2011 South Clark Place Room
CP2/5C24
Arlington, VA 22202
ETATS-UNIS D'AMERIQUE

in its capacity as elected Office

Date of mailing (day/month/year) 09 January 2001 (09.01.01)	
International application No. PCT/EP00/04499	**Applicant's or agent's file reference** PG3707/PCT
International filing date (day/month/year) 18 May 2000 (18.05.00)	**Priority date** (day/month/year) 21 May 1999 (21.05.99)
Applicant WILSON, Alan, Anthony et al	

1. The designated Office is hereby notified of its election made:

[X] in the demand filed with the International Preliminary Examining Authority on:

13 December 2000 (13.12.00)

[ ] in a notice effecting later election filed with the International Bureau on:

2. The election [X] was

[ ] was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO **34, chemin des Colombettes** **1211 Geneva 20, Switzerland**	Authorized officer Juan Cruz

PCT

REQUEST

The undersigned requests that the present international application be processed according to the Patent Cooperation Treaty

For receiving Office use only

International Application No.

International Filing Date

Name of receiving Office and "PCT International Application"

Applicant's or agent's file reference *(if desired) (12 characters maximum)* PG3707/ PCT

Box No. I **TITLE OF INVENTION**

Method and apparatus for loading a container with a product

Box No. II **APPLICANT**

Name and address: *(Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below).*

Glaxo Group Limited
Glaxo Wellcome House
Berkeley Avenue
Greenford, Middlesex
UB6 0NN
GB

☐ This person is also inventor.

Telephone No. 0171 493 4060

Facsimile No. 0181 966 8838

Teleprinter No. 25456

State *(i.e. country)* of nationality: GB

State *(i.e. country)* of residence: GB

This person is applicant for the purposes of: ☐ all designated States ☒ all designated States except the United States of America ☐ the United States of America only ☐ the States indicated in the Supplemental Box

Box No. III **FURTHER APPLICANTS AND/OR (FURTHER) INVENTORS**

Name and address: *(Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)*

WILSON, Alan Anthony
Glaxo Wellcome plc.
Park Road
Ware, Herts.
SG12 ODP
GB

This person is:

☐ applicant only

☒ applicant and inventor

☐ inventor only *(If this check-box is marked, do not fill in below.)*

State *(i.e. country)* of nationality: GB

State *(i.e. country)* of residence: GB

This person is applicant for the purposes of: ☐ all designated States ☐ all designated States except the United States of America ☒ the United States of America only ☐ the States indicated in the Supplemental Box

☒ Further applicants and/or (further) inventors are indicated on a continuation sheet.

Box No. IV **AGENT OR COMMON REPRESENTATIVE; OR ADDRESS FOR CORRESPONDENCE**

The person identified below is hereby/has been appointed to act on behalf of the applicant(s) before the competent International Authorities as: ☒ agent ☐ common representative

Name and address: *(Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country).*

PIKE, Christopher Gerard
Pike & Co.,
Hayes Loft, 68A Hayes Place
Marlow, Buckinghamshire
SL7 2BT, GB

Telephone No.: 01628-471869

Facsimile No.: 01628-471878

Teleprinter No.:

☐ Mark this check-box where no agent or common representative is/has been appointed and the space above is used instead to indicate a special address to which correspondence should be sent.

Express Mail Label No.: EL395941543US

See Notes to the request form

Continuation of Box No. III FURTHER APPLICANTS AND/OR (FURTHER) INVENTORS

If none of the following sub-boxes is used, this sheet is not to be included in the request.

Name and address: *(Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)*

FARR, Phillip William
Glaxo Wellcome plc.
Park Road
Ware, Herts.
SG12 ODP
GB

This person is:
- ☐ applicant only
- ☒ applicant and inventor
- ☐ inventor only *(If this check-box is marked, do not fill in below.)*

State *(i.e. country)* of nationality: GB

State *(i.e. country)* of residence: GB

This person is applicant for the purposes of: ☐ all designated States ☐ all designated States except the United States of America ☒ the United States of America only ☐ the States indicated in the Supplemental Box

Name and address: *(Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)*

PIKE, Marcus Edward
Glaxo Wellcome plc.
Priory Street
Ware, Herts.
SG12 ODJ
GB

This person is:
- ☐ applicant only
- ☒ applicant and inventor
- ☐ inventor only *(If this check-box is marked, do not fill in below.)*

State *(i.e. country)* of nationality: GB

State *(i.e. country)* of residence: GB

This person is applicant for the purposes of: ☐ all designated States ☐ all designated States except the United States of America ☒ the United States of America only ☐ the States indicated in the Supplemental Box

Name and address: *(Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)*

This person is:
- ☐ applicant only
- ☐ applicant and inventor
- ☐ inventor only *(If this check-box is marked, do not fill in below.)*

State *(i.e. country)* of nationality:

State *(i.e. country)* of residence:

This person is applicant for the purposes of: ☐ all designated States ☐ all designated States except the United States of America ☐ the United States of America only ☐ the States indicated in the Supplemental Box

Name and address: *(Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this Box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)*

This person is:
- ☐ applicant only
- ☐ applicant and inventor
- ☐ inventor only *(If this check-box is marked, do not fill in below.)*

State *(i.e. country)* of nationality:

State *(i.e. country)* of residence:

This person is applicant for the purposes of: ☐ all designated States ☐ all designated States except the United States of America ☐ the United States of America only ☐ the States indicated in the Supplemental Box

☐ Further applicants and/or (further) inventors are indicated on a continuation sheet.

Box No. V DESIGNATION OF STATES

The following designations are hereby made under Rule 4.9(a) *(mark the applicable check-boxes; at least one must be marked):*

Regional Patent

☑ **AP** **ARIPO Patent:** **GH** Ghana, **GM** Gambia, **KE** Kenya, **LS** Lesotho, **MW** Malawi, **SD** Sudan, **SL** Sierra Leone, **SZ** Swaziland, **TZ** United Republic of Tanzania, **UG** Uganda, **ZW** Zimbabwe, and any other State which is a Contracting State of the Harare Protocol and of the PCT.

☑ **EA** **Eurasian Patent:** **AM** Armenia, **AZ** Azerbaijan, **BY** Belarus, **KG** Kyrgyzstan, **KZ** Kazakstan, **MD** Republic of Moldova, **RU** Russian Federation, **TJ** Tajikistan, **TM** Turkmenistan, and any other State which is a Contracting State of the Eurasian Patent Convention and of the PCT

☑ **EP** **European Patent:** **AT** Austria, **BE** Belgium, **CH and LI** Switzerland and Liechtenstein, **CY** Cyprus, **DE** Germany, **DK** Denmark, **ES** Spain, **FI** Finland, **FR** France, **GB** United Kingdom, **GR** Greece, **IE** Ireland, **IT** Italy, **LU** Luxembourg, **MC** Monaco, **NL** Netherlands, **PT** Portugal, **SE** Sweden, and any other State which is a Contracting State of the European Patent Convention and of the PCT

☑ **OA** **OAPI Patent:** **BF** Burkina Faso, **BJ** Benin, **CF** Central African Republic, **CG** Congo, **CI** Côte d'Ivoire, **CM** Cameroon, **GA** Gabon, **GN** Guinea, **GW** Guinea Bissau, **ML** Mali, **MR** Mauritania, **NE** Niger, **SN** Senegal, **TD** Chad, **TG** Togo, and any other State which is a member State of OAPI and a Contracting State of the PCT *(if other kind of protection or treatment desired, specify on dotted line)*.....

National Patent *(if other kind of protection or treatment desired, specify on dotted line):*

☑ **AE** United Arab Emirates
☑ **AL** Albania.....
☑ **AM** Armenia.....
☑ **AT** Austria.....
☑ **AU** Australia.....
☑ **AZ** Azerbaijan

☑ **BA** Bosnia and Herzegovina .....
☑ **BB** Barbados
☑ **BG** Bulgaria.....
☑ **BR** Brazil.....
☑ **BY** Belarus.....
☑ **CA** Canada
☑ **CH and LI** Switzerland and Liechtenstein
☑ **CN** China.....
☑ **CR** Costa Rica.....
☑ **CU** Cuba.....
☑ **CZ** Czech Republic.....
☑ **DE** Germany.....
☑ **DK** Denmark.....
☑ **DM** Dominica.....
☑ **EE** Estonia.....
☑ **ES** Spain.....
☑ **FI** Finland.....
☑ **GB** United Kingdom
☑ **GD** Grenada
☑ **GE** Georgia.....
☑ **GH** Ghana.....
☑ **GM** Gambia
☑ **HR** Croatia .....
☑ **HU** Hungary.....
☑ **ID** Indonesia

☑ **IL** Israel.....
☑ **IN** India.....
☑ **IS** Iceland
☑ **JP** Japan.....
☑ **KE** Kenya.....
☑ **KG** Kyrgyzstan.....
☑ **KP** Democratic People's Republic of Korea.....

☑ **KR** Republic of Korea.....
☑ **KZ** Kazakhstan.....
☑ **LC** Saint Lucia
☑ **LK** Sri Lanka

☑ **LR** Liberia
☑ **LS** Lesotho.....
☑ **LT** Lithuania
☑ **LU** Luxembourg
☑ **LV** Latvia
☑ **MA** Morocco.....
☑ **MD** Republic of Moldova.....
☑ **MG** Madagascar.....
☑ **MK** The former Yugoslav Republic of Macedonia .....
☑ **MN** Mongolia
☑ **MW** Malawi.....
☑ **MX** Mexico.....
☑ **NO** Norway
☑ **NZ** New Zealand.....
☑ **PL** Poland.....

☑ **PT** Portugal.....
☑ **RO** Romania
☑ **RU** Russian Federation.....
☑ **SD** Sudan

☑ **SE** Sweden
☑ **SG** Singapore
☑ **SI** Slovenia.....
☑ **SK** Slovakia.....
☑ **SL** Sierra Leone
☑ **TJ** Tajikistan.....
☑ **TM** Turkmenistan.....
☑ **TR** Turkey.....
☑ **TT** Trinidad and Tobago.....
☑ **TZ** United Republic of Tanzania
☑ **UA** Ukraine.....
☑ **UG** Uganda.....
☑ **US** United States of America.....

☑ **UZ** Uzbekistan.....
☑ **VN** Viet Nam.....
☑ **YU** Yugoslavia.....
☑ **ZA** South Africa
☑ **ZW** Zimbabwe

Check-boxes reserved for designating States (for the purposes of a national patent) which have become party to the PCT after issuance of this sheet:

☑ **AG** Antigua & Barbuda
☑ **DZ** Algeria
☑ **MZ** Mozambique

Precautionary Designation Statement: In addition to the designations made above, the applicant also makes under Rule 4.9(b) all other designations which would be permitted under the PCT except any designation(s) indicated in the Supplemental Box as being excluded from the scope of this statement. The applicant declares that those additional designations are subject to confirmation and that any designation which is not confirmed before the expiration of 15 months from the priority date is to be regarded as withdrawn by the applicant at the expiration of that time limit. *(Confirmation of a designation consists of the filing of a notice specifying that designation and the payment of the designation and confirmation fees. Confirmation must reach the receiving Office within the 15-month time limit.)*

Box No. VI PRIORITY CLAIM ☐ Further priority claims are indicated in the Supplemental Box

Filing Date of Earlier Application (day/month/year)	Number of earlier application	Where earlier application is: national application: country	regional application:* regional Office	international application: receiving Office
item (1) (21.05.99) 21 May 1999	9911770.7	GB		
item (2)				

☐ The receiving Office is requested to prepare and transmit to the International Bureau a certified copy of the earlier application(s) *(only if the earlier application was filed with the Office which for the purposes of the present international application is the receiving Office)* identified above as item(s): _____

** Where the earlier application is an ARIPO application, it is mandatory to indicate in the Supplemental Box at least one country party to the Paris Convention for the Protection of Industrial Property for which that earli application was filed (Rue 4.10(b)(ii)). See Supplemental Box.*

Box No. VII INTERNATIONAL SEARCHING AUTHORITY

Choice of International Searching Authority (ISA) *(if two or more International Searching Authorities are competent to carry out the international search, indicate the Authority chosen; the two-letter code may be used):*
ISA/

Request to use results of earlier search; reference to that search *(if an earlier search has been carried out by or requested from the International Searching Authority):*
Date *(day/month/year)* Number Country *(or regional office)*

Box. VIII CHECK LIST; LANGUAGE OF FILING

This international application contains the following **number of sheets:**

request	: 4
description (excluding sequence listing part)	: 15
claims	: 8
abstract	: 1
drawings	: 7
sequence listing part of description	: ____
Total number of sheets	**: 35**

This international application is **accompanied by** the item(s) marked below:

1. ☑ fee calculation sheet
2. ☑ separate signed power of attorney (1)
3. ☑ copy of general power of attorney; reference number, if any:
4. ☐ statement explaining lack of signature
5. ☑ priority document (1) identified in Box No. VI as item(s): 1
6. ☐ translation of international application into (language):
7. ☐ separate indications concerning deposited microorganism or other biological material
8. ☐ nucleotide and/or amino acid sequence listing in computer readable form
9. ☐ other *(specify):*

Figure of the drawings which should accompany the abstract: None

Language of filing of the international application: English

Box No. IX SIGNATURE OF APPLICANT OR AGENT

Next to each signature, indicate the name of the person signing and the capacity in which the person signs (if such capacity is not obvious from reading the request).

Christopher Gerard Pike
Agent for the Applicants

For receiving Office use only

1. Date of actual receipt of the purported international application
2. Drawings ☐ received: ☐ not received:
3. Corrected date of actual receipt due to later but timely received papers or drawings completing the purported international application:
4. Date of timely receipt of the required corrections under PCT Article 11(2):
5. International Searching Authority specified by the applicant: ISA/
6. ☐ Transmittal of search copy delayed until search fee is paid

For International Bureau use only

Date of receipt of the record copy by the International Bureau

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference	FOR FURTHER ACTION	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
PG3707/PCT		
International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/EP00/04499	18/05/2000	21/05/1999
International Patent Classification (IPC) or national classification and IPC B65B1/36		
Applicant GLAXO GROUP LIMITED		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 4 sheets, including this cover sheet.

   ☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

   These annexes consist of a total of 9 sheets.

3. This report contains indications relating to the following items:

   - I ☒ Basis of the report
   - II ☐ Priority
   - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
   - IV ☐ Lack of unity of invention
   - V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations suporting such statement
   - VI ☐ Certain documents cited
   - VII ☐ Certain defects in the international application
   - VIII ☐ Certain observations on the international application

Date of submission of the demand	Date of completion of this report
13/12/2000	17.07.2001
Name and mailing address of the international preliminary examining authority: European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016	Authorized officer Grentzius, W Telephone No. +31 70 340 3728

Form PCT/IPEA/409 (cover sheet) (January 1994)

Express Mail Label No.:
EL395941543US

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/EP00/04499

I. Basis of the report

1. With regard to the **elements** of the international application *(Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17))*:
Description, pages:

1-15	as originally filed	

Claims, No.:

1-80	with telefax of	04/05/2001

Drawings, sheets:

1/7-7/7	as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

   These elements were available or furnished to this Authority in the following language: , which is:

   - ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
   - ☐ the language of publication of the international application (under Rule 48.3(b)).
   - ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

   - ☐ contained in the international application in written form.
   - ☐ filed together with the international application in computer readable form.
   - ☐ furnished subsequently to this Authority in written form.
   - ☐ furnished subsequently to this Authority in computer readable form.
   - ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
   - ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

   - ☐ the description, pages:
   - ☐ the claims, Nos.:

☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

   (Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	1-80
	No:	Claims	
Inventive step (IS)	Yes:	Claims	1-80
	No:	Claims	
Industrial applicability (IA)	Yes:	Claims	1-80
	No:	Claims	

2. Citations and explanations
   see separate sheet

Re Item V

Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

Document US 3718164, which is considered to represent the closest prior art, discloses a method and an apparatus for loading a container with a defined quantity of product comprising features a), b) and c) of claims 1 and 42, wherein the leveller blade is spaced from the perforated blade.

The method and apparatus of claims 1 and 42 differ from this prior art in that the leveller blade presents a forward acute angle to the sweeping path, whereby the blade exerts a compressive force on the powder which produces a bed of more uniform density. Such an arrangement of the leveller blade for the purpose of filling a perforated plate is not fairly suggested by the available prior art.

The subject matter of claims 1 and 42 therefore satisfies the criteria of novelty and inventive step. The same applies to claims 2-41 and 43-78, which are dependent on claims 1 and 42 respectively.

Claims 79 and 80 relating to a tablet and a compacted powder obtained by said method are also new and inventive.

CLAIMS

1. A method of loading a container with a defined quantity of product which comprises:
a) closing off a perforation in a perforated plate;
b) directing powder into said closed-off perforation by the action of a first leveller blade movable on a sweeping path relative to the perforated plate; and
c) transferring the contents of the perforation to said container,

wherein the first leveller blade is spaced from the perforated plate and presents a forward acute angle to the sweeping path.

2. A method according to claim 1, wherein the closing off is achievable by the use of a blanking plate.

3. A method according to claim 1, wherein the closing off is achievable by the use of a blanking pin inserted into the perforation.

4. A method according to claim 3, wherein the blanking pin is moveable within the perforation to adjust the volume of the closed-off perforation.

5. A method according to claim 1, wherein the closing off is achievable by placing a container in registration with the perforation.

6. A method according to any of claims 1 to 5, wherein the diameter of the closed-off perforation is between 1.5 and 15 mm.

7. A method according to any of claims 1 to 6, wherein said first leveller blade moves on a linear sweeping path.

8. A method according to any of claims 1 to 7, wherein the forward acute angle is between 1 and 60°.

9. A method according to claim 8, wherein the forward acute angle is between 5 and 25°.

10. A method according to any of claims 1 to 9, wherein the first leveller blade presents multiple forward acute angles to the linear sweeping path.

11. A method according to claim 10, wherein the first leveller blade is curved in form.

12. A method according to claim 11, wherein the first leveller blade is articulated in form.

13. A method according to any of claims 1 to 9, wherein the first leveller blade has a flat tail section.

14. A method according to any of claims 7 to 13 comprising plural movements of the first leveller relative to the perforated plate.

15. A method according to any of claims 7 to 14, wherein a thin layer of powder is left on the perforated bed after movement of the first leveller blade.

16. A method according to claim 15, wherein the depth of said thin layer of powder is from 3 to 20 mm.

17. A method according to claim 16, wherein the depth of said thin layer of powder is from 4 to 8 mm.

18. A method according to any of claims 7 to 17, wherein the powder is further directable by at least one subsequent leveller blade.

19. A method according to claim 18, wherein the at least one subsequent leveller blade moves along the perforated plate at a lower level than that of the first leveller blade.

20. A method according to claim 19, wherein the distance between the level of movement of the first leveller blade and the at least one subsequent leveller blade is 0 to 12 mm.

21. A method according to claim 20, wherein the distance between the level of movement of the first leveller blade and the at least one subsequent leveller blade is 1 to 3 mm.

22. A method according to any of claims 1 to 7, wherein the perforated plate forms the rim of a drum.

23. A method according to claim 22, wherein the powder is directable by gravity as said drum rotates.

24. A method according to either any of claims 1 to 23, additionally comprising removing excess powder from said perforated plate subsequent to directing powder into the perforation.

25. A method according to claim 24, comprising removing said excess powder by the action of a wiper.

26. A method according to any of claims 1 to 25, wherein the contents of the perforation are transferable by the action of a transfer pin.

27. A method according to any of claims 1 to 26, wherein direction of powder into the closed-off perforation and transfer into the blind cavity is a continuous step.

28. A method according to any of claims 1 to 27, wherein transfer of the contents of the perforation to the container comprises:

a) reopening the perforation;

b) placing the container in registration with the perforation; and

c) transferring the contents of the perforation into the container.

29. A method according to any of claims 1 to 25, wherein the contents of the perforation are transferable by the action of a vacuum system.

30. A method according to claim 29, wherein said vacuum system comprises a vacuum head and at least one vacuum cup.

31. A method according to any of claims 1 to 30 additionally comprising compacting the powder in the perforation.

32. A method according to claim 31, wherein the powder is compacted to a volume of between 70 and 100% of the original volume of powder in the closed-off perforation.

33. A method according to claim 31, wherein the powder is compacted to form a tablet.

34. A method according to any of claims 31 to 33, wherein the powder is compactable by the action of a compacting pin.

35. A method according to either of claims 26 or 34, wherein the transfer pin and the compacting pin are integral.

36. A method according to either of claims 26 or 34, wherein the transfer pin and the compacting pin are identical.

37. A method according to any of claims 1 to 36, wherein the container is a blind cavity.

38. A method according to claim 37, wherein the blind cavity is selected from the group consisting of a blister pocket, an injection moulded plastic pocket, a capsule and a bulk container.

39. A method according to any of claims 1 to 38 additionally comprising applying a lid to the container to protect the contents therein.

40. A method according to any of claims 1 to 39, wherein the powder comprises a medicament.

41. A method according to claim 40, wherein the medicament is selected from the group consisting of albuterol, salmeterol, fluticasone propionate and beclomethasone dipropionate and salts or solvates thereof and any mixtures thereof.

42. An apparatus for loading a container with a defined quantity of product, which comprises:
a) a perforated plate;
b) a closure for reversibly closing off a perforation in the perforated plate;
c) a director for directing powder into said perforation, said director comprising a first leveller blade movable on a sweeping path relative to the perforated plate; and
d) a transferor for transferring the contents of the perforation to said container,

wherein the first leveller blade is spaced from the perforated plate and presents a forward acute angle to the sweeping path.

43. An apparatus according to claim 42, wherein the closure comprises a blanking plate.

44. An apparatus according to claim 42, wherein the closure comprises a blanking pin inserted into the perforation.

45. An apparatus according to claim 44, wherein the blanking pin is moveable within the perforation to adjust the volume of the perforation.

46. An apparatus according to any of claims 42 to 45, wherein the diameter of the closed-off perforation is between 1.5mm and 15mm.

47. An apparatus according to claim 42, wherein the closure comprises the container placed in registration with the perforation.

48. An apparatus according to any of claims 42 to 47, wherein said first leveller blade is movable across the perforated plate on a linear sweeping path.

49. An apparatus according to any of claims 42 to 48, wherein the forward acute angle is between 1 and 60°.

50. An apparatus according to claim 49, wherein the forward acute angle is between 5 and 25°.

51. An apparatus according to any of claims 42 to 50, wherein the first leveller blade presents multiple forward acute angles to the linear sweeping path.

52. An apparatus according to claim 51, wherein the first leveller blade is curved in form.

53. An apparatus according to claim 51, wherein the first leveller blade is articulated in form.

54. An apparatus according to any of claims 42 to 50, wherein the first leveller blade has a flat tail section.

55. An apparatus according to any of claims 48 to 54, wherein the first leveller blade is positioned to leave a gap of between 3 and 20mm between the first leveller blade and the perforated plate.

56. An apparatus according to claim 55, wherein the first leveller blade is positioned to leave a gap of between 4 and 8 mm between the first leveller blade and the perforated plate.

57. An apparatus according to any of claims 48 to 56, wherein the director further comprises at least one subsequent leveller blade.

58. An apparatus according to claim 57, wherein the at least one subsequent leveller blade is positioned closer to the perforated plate than the first leveller blade.

59. An apparatus according to claim 58, wherein the at least one subsequent leveller blade is positioned 0 to 12 mm closer to the perforated plate than the first leveller blade.

60. An apparatus according to claim 59, wherein the at least one subsequent leveller blade is positioned 1 to 3 mm closer to the perforated plate than the first leveller blade.

61. An apparatus according to any of claims 42 to 48, wherein the perforated plate forms the rim of a drum.

62. An apparatus according to claim 61, wherein the powder is directed into the closed-off perforations by gravity as the drum rotates.

63. An apparatus according to any of claims 42 to 62, wherein the transferor comprises a transferor pin.

64. An apparatus according to any of claims 42 to 62, wherein the transferor comprises a vacuum system.

65. An apparatus according to claim 64, wherein the vacuum system comprises a vacuum head and at least one vacuum cup.

66. An apparatus according to any of claims 42 to 65 additionally comprising a compactor for compacting the powder in the perforation.

67. An apparatus according to claim 66, wherein the compactor comprises a compactor pin.

68. An apparatus according to either of claims 63 or 67, wherein the transferor and compactor are integral.

69. An apparatus according to either of claims 63 or 67, wherein the transferor and compactor are identical.

70. An apparatus according to any of claims 42 to 69 additionally comprising registration means for registering the container with the perforation.

71. An apparatus according to any of claims 42 to 70 additionally comprising a powder remover for removing excess powder from the perforated plate subsequent to action of the powder director.

72. An apparatus according to claim 71, wherein the powder remover comprises a wiper.

73. An apparatus according to any of claims 42 to 72 wherein the container is a blind cavity.

74. An apparatus according to claim 73, wherein the blind cavity is selected from the group consisting of a blister pocket, an injection moulded plastic pocket, a capsule and a bulk container.

75. An apparatus according to any of claims 42 to 74 additionally comprising a lid applier for applying a lid to the container to protect the powder therein.

76. An apparatus according to any of claims 42 to 75 further comprising powder.

77. An apparatus according to claim 76, wherein the powder comprises a medicament.

78. An apparatus according to claim 77, wherein the medicament is selected from the group consisting of albuterol, salmeterol, fluticasone propionate and beclomethasone dipropionate and salts or solvates thereof and any mixtures thereof.

79. A tablet obtainable by the method according to any of claims 1 to 41.

80. Compacted powder obtainable by the method according to any of claims 1 to 41.

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
30 November 2000 (30.11.2000)

PCT

(10) International Publication Number
WO 00/71419 A1

(51) International Patent Classification[7]: B65B 1/36, B30B 15/30, 11/12

(21) International Application Number: PCT/EP00/04499

(22) International Filing Date: 18 May 2000 (18.05.2000)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
9911770.7 21 May 1999 (21.05.1999) GB

(71) Applicant *(for all designated States except US)*: GLAXO GROUP LIMITED [GB/GB]; Glaxo Wellcome House, Berkeley Avenue, Greenford, Middlesex UB6 0NN (GB).

(72) Inventors; and

(75) Inventors/Applicants *(for US only)*: WILSON, Alan, Anthony [GB/GB]; Glaxo Wellcome plc, Park Road, Ware, Herts. SG12 0DP (GB). FARR, Phillip, William [GB/GB]; Glaxo Wellcome plc, Park Road, Ware, Herts. SG12 0DP (GB). PIKE, Marcus, Edward [GB/GB]; Glaxo Wellcome plc., Priory Street, Ware, Herts. SG12 0DJ (GB).

(74) Agent: PIKE, Christopher, Gerard; Pike & Co., Hayes Loft, 68A Hayes Place, Marlow, Buckinghamshire SL7 2BT (GB).

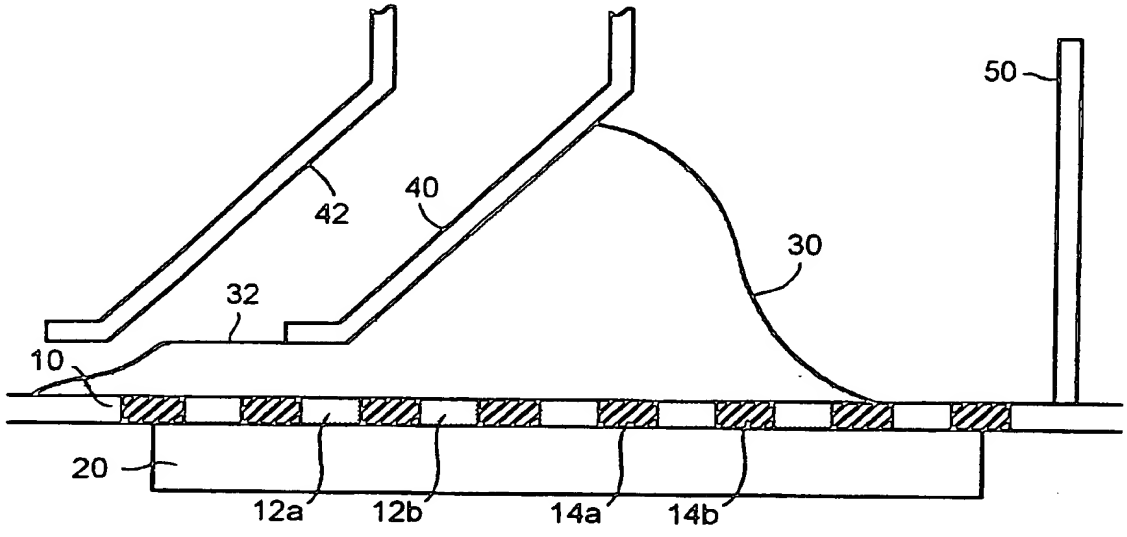
(81) Designated States *(national)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.

(84) Designated States *(regional)*: ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

Published:
— *With international search report.*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: METHOD AND APPARATUS FOR LOADING A CONTAINER WITH A PRODUCT



(57) Abstract: There is provided a method of loading a container with a defined quantity of product which comprises the steps of a) closing off a perforation (12a, 12b) in a perforated plate (10); b) directing powder (30) into said closed-off perforation; and c) transferring the contents of the perforation to said container.

WO 00/71419 A1

CLAIMS

1. A method of loading a container with a defined quantity of product which comprises:
a) closing off a perforation in a perforated plate;
b) directing powder into said closed-off perforation; and
c) transferring the contents of the perforation to said container.

2. A method according to claim 1, wherein the closing off is achievable by the use of a blanking plate.

3. A method according to claim 1, wherein the closing off is achievable by the use of a blanking pin inserted into the perforation.

4. A method according to claim 3, wherein the blanking pin is moveable within the perforation to adjust the volume of the closed-off perforation.

5. A method according to claim 1, wherein the closing off is achievable by placing a container in registration with the perforation.

6. A method according to any of claims 1 to 5 wherein the diameter of the closed-off perforation is between 1.5 and 15 mm.

7. A method according to any of claims 1 to 6, wherein the powder is directable by the action of a first leveller blade movable relative to the perforated plate.

8. A method according to claim 7, wherein said first leveller blade moves on a linear sweeping path.

9. A method according to claim 8 wherein the first leveller blade is perpendicular to the linear sweeping path.

10. A method according to claim 8 wherein the first leveller blade presents a forward acute angle to the linear sweeping path.

Replaced by Article 34

11. A method according to claim 10 wherein the forward acute angle is between 1 and 60°.

12. A method according to claim 11 wherein the forward acute angle is between 5 and 25°.

13. A method according to any of claims 10 to 12 wherein the first leveller blade presents multiple forward acute angles to the linear sweeping path.

14. A method according to any of claims 7 to 13 comprising plural movements of the first leveller relative to the perforated plate.

15. A method according to any of claims 7 to 14 wherein a thin layer of powder is left on the perforated bed after movement of the first leveller blade.

16. A method according to claim 15 wherein the depth of said thin layer of powder is from 3 to 20 mm.

17. A method according to claim 16 wherein the depth of said thin layer of powder is from 4 to 8 mm.

18. A method according to any of claims 7 to 17 wherein the powder is further directable by at least one subsequent leveller blade.

19. A method according to claim 18 wherein the at least one subsequent leveller blade moves along the perforated plate at a lower level than that of the first leveller blade.

20. A method according to claim 19 wherein the distance between the level of movement of the first leveller blade and the at least one subsequent leveller blade is 0 to 12 mm.

21. A method according to claim 20 wherein the distance between the level of movement of the first leveller blade and the at least one subsequent leveller blade is 1 to 3 mm.

22. A method according to any of claims 1 to 7 wherein the perforated plate forms the rim of a drum.

23. A method according to claim 22 wherein the powder is directable by gravity as said drum rotates..

24. A method according to either any of claims 1 to 23, additionally comprising removing excess powder from said perforated plate subsequent to directing powder into the perforation.

25. A method according to claim 24, comprising removing said excess powder by the action of a wiper.

26. A method according to any of claims 1 to 25, wherein the contents of the perforation are transferable by the action of a transfer pin.

27. A method according to any of claims 1 to 26 wherein direction of powder into the closed-off perforation and transfer into the blind cavity is a continuous step.

28. A method according to any of claims 1 to 27 wherein transfer of the contents of the perforation to the container comprises:

a) reopening the perforation;

b) placing the container in registration with the perforation; and

c) transferring the contents of the perforation into the container.

29. A method according to any of claims 1 to 25 wherein the contents of the perforation are transferable by the action of a vacuum system.

30. A method according to claim 29 wherein said vacuum system comprises a vacuum head and at least one vacuum cup.

31. A method according to any of claims 1 to 30, additionally comprising compacting the powder in the perforation.

32. A method according to claim 31 wherein the powder is compacted to a volume of between 70 and 100% of the original volume of powder in the closed-off perforation.

33. A method according to claim 31 wherein the powder is compacted to form a tablet.

34. A method according to any of claims 31 to 33, wherein the powder is compactable by the action of a compacting pin.

35. A method according to either of claims 26 or 34, wherein the transfer pin and the compacting pin are integral.

36. A method according to either of claims 26 or 34, wherein the transfer pin and the compacting pin are identical.

37. A method according to any of claims 1 to 36 wherein the container is a blind cavity.

38. A method according to claim 37 wherein the blind cavity is selected from the group consisting of a blister pocket, an injection moulded plastic pocket, a capsule and a bulk container.

39. A method according to any of claims 1 to 38, additionally comprising applying a lid to the container to protect the contents therein.

40. A method according to any of claims 1 to 39, wherein the powder comprises a medicament.

41. A method according to claim 40 wherein the medicament is selected from the group consisting of albuterol, salmeterol, fluticasone propionate and beclomethasone dipropionate and salts or solvates thereof and any mixtures thereof.

42. An apparatus for loading a container with a defined quantity of product, which comprises:
a) a perforated plate;
b) a closure for reversibly closing off a perforation in the perforated plate;
c) a director for directing powder into said perforation; and
d) a transferor for transferring the contents of the perforation to said container.

43. An apparatus according to claim 42, wherein the closure comprises a blanking plate.

44. An apparatus according to claim 42, wherein the closure comprises a blanking pin inserted into the perforation.

45. An apparatus according to claim 44, wherein the blanking pin is moveable within the perforation to adjust the volume of the perforation.

46. An apparatus according to any of claims 42 to 45 wherein the diameter of the closed-off perforation is between 1.5mm and 15mm.

47. An apparatus according to claim 42, wherein the closure comprises the container placed in registration with the perforation.

48. An apparatus according to any of claims 42 to 47, wherein the director comprises a first leveller blade movable relative to the perforated plate.

49. An apparatus according to claims 48, wherein said first leveller blade is movable across the perforated plate on a linear sweeping path.

50. A method according to claim 49 wherein the first leveller blade is perpendicular to the linear sweeping path.

51. A method according to claim 49 wherein the first leveller blade presents a forward acute angle to the linear sweeping path.

52. A method according to claim 51 wherein the forward acute angle is between 1 and 60°.

53. A method according to claim 52 wherein the forward acute angle is between 5 and 25°.

54. A method according to any of claims 51 to 53 wherein the first leveller blade presents multiple forward acute angles to the linear sweeping path.

55. An apparatus according to any of claims 48 to 54 wherein the first leveller blade is positioned to leave a gap of between 3 and 20mm between the first leveller blade and the perforated plate.

56. An apparatus according to claim 55 wherein the first leveller blade is positioned to leave a gap of between 4 and 8 mm between the first leveller blade and the perforated plate.

57. An apparatus according to any of claims 48 to 56 wherein the director further comprises at least one subsequent leveller blade.

58. An apparatus according to claim 57 wherein the at least one subsequent leveller blade is positioned closer to the perforated plate than the first leveller blade.

59. An apparatus according to claim 58 wherein the at least one subsequent leveller blade is positioned 0 to 12 mm closer to the perforated plate than the first leveller blade.

60. An apparatus according to claim 59 wherein the at least one subsequent leveller blade is positioned 1 to 3 mm closer to the perforated plate than the first leveller blade.

61. An apparatus according to any of claims 42 to 48 wherein the perforated plate forms the rim of a drum.

62. An apparatus according to claim 61 wherein the powder is directed into the closed-off perforations by gravity as the drum rotates.

63. An apparatus according to any of claims 42 to 62, wherein the transferor comprises a transferor pin.

64. An apparatus according to any of claims 42 to 62 wherein the transferor comprises a vacuum system.

65. An apparatus according to claim 64 wherein the vacuum system comprises a vacuum head and at least one vacuum cup.

66. An apparatus according to any of claims 42 to 65 additionally comprising a compactor for compacting the powder in the perforation.

67. An apparatus according to claim 66, wherein the compactor comprises a compactor pin.

68. An apparatus according to either of claims 63 or 67, wherein the transferor and compactor are integral.

69. An apparatus according to either of claims 63 or 67, wherein the transferor and compactor are identical.

70. An apparatus according to any of claims 42 to 69 additionally comprising registration means for registering the container with the perforation.

71. An apparatus according to any of claims 42 to 70, additionally comprising a powder remover for removing excess powder from the perforated plate subsequent to action of the powder director.

72. An apparatus according to claim 71, wherein the powder remover comprises a wiper.

73. An apparatus according to any of claims 42 to 72 wherein the container is a blind cavity.

74. An apparatus according to claim 73 wherein the blind cavity is selected from the group consisting of a blister pocket, an injection moulded plastic pocket, a capsule and a bulk container.

75. An apparatus according to any of claims 42 to 74, additionally comprising a lid applier for applying a lid to the container to protect the powder therein.

76. An apparatus according to any of claims 42 to 75 further comprising powder.

77. An apparatus according to claim 76 wherein the powder comprises a medicament.

78. An apparatus according to claim 77 wherein the medicament is selected from the group consisting of albuterol, salmeterol, fluticasone propionate and beclomethasone dipropionate and salts or solvates thereof and any mixtures thereof.

79. A tablet obtainable by the method according to any of claims 1 to 41.

80. Compacted powder obtainable by the method according to any of claims 1 to 41.